



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.                        | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/997,898                             | 11/30/2001  | Ernst Jorn           | P/772-308           | 4204             |
| 24998                                  | 7590        | 12/16/2004           | EXAMINER            |                  |
| DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP |             |                      | KERNS, KEVIN P      |                  |
| 2101 L Street, NW                      |             |                      | ART UNIT            |                  |
| Washington, DC 20037                   |             |                      | PAPER NUMBER        |                  |

1725

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/997,898

Applicant(s)

JORN ET AL.

Examiner

Kevin P. Kerns

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-11 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-11 and 13-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In this instance, the legal phraseology "consisting of" remains in the abstract.

2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors (grammatical, typographical, and idiomatic). Cooperation of the applicants is requested in correcting any errors of which the applicants may become aware of in the specification, in the claims, and in any future amendment(s) that the applicants may file.

The applicants are suggested to check and correct the numerous grammatical errors that remain in the specification. For example, on page 2, 3<sup>rd</sup> line from the bottom of the amendment to the specification, "groves" should be changed to "grooves". Pages 2 and 3, in particular, of the original specification contain several grammatical errors that may have been obtained from the translation into English.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2, 4-11, and 13-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 1, it remains unclear what is meant by "connect the reaction passages in parallel manner", as the inlet and outlet passages are "substantially perpendicular" to the reaction passages. It is unclear how this type of arrangement would occur, as the "connections" would have to be bent by 90 degrees.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1725

7. Claims 1, 2, 4-11, and 13-18 insofar as definite are rejected under 35 U.S.C. 103(a) as being unpatentable over Northrup et al. (WO 98/50147) in view of Poschmann et al. (US 6,180,081).

Northrup et al. disclose a microfabricated chemical reaction chamber for non-adiabatic catalytic reactions, in which the apparatus 10 includes a test device 11 (reaction chamber array) in the form of a copper block (ingot); three parallel, micromachined (drilled) reaction chambers/channels (12,13,14) adapted to hold a catalyst, and forming inlet and outlet passages (for introduction and discharge of feedstock) within and on the surface of the ingot (test device 11); a thermoelectric cooling means (15,16); an electrical heating means (17-20) arranged on the ingot in a substantially perpendicular direction with the reaction passages/channels (12,13,14); and a heat insulated shell, in the form of thermal reservoirs 21,22 (abstract; pages 2-5; and Figure). Northrup et al. do not disclose that the inlet and outlet passages are provided within the ingot substantially perpendicular to the reaction passages and/or connect the reaction passages in a parallel manner (as best as can be understood from the claim 1 language – see 35 USC 112, 2<sup>nd</sup> paragraph section above).

However, Poschmann et al. disclose a reactor unit for a catalytic chemical reaction, in which the reactor unit includes a monolithic block 1 (ingot) with several parallel lengthwise channels 2 (inlet and outlet passages) in the reaction chamber, into which the reaction starting product can flow; a burner tube 4 coaxially arranged within each channel 2, such that reaction chambers 6 filled with catalyst material are defined; and a plurality of cross channels 7 (Figure 2) that are substantially perpendicular to the

parallel channels 2, such that the cross channels 7 serve as outlets for the reaction end product (hydrogen), which is advantageous for being highly compact and achieving high conversion efficiency (abstract; column 2, lines 18-67; column 3, lines 1-4 and 20-67; column 4, lines 1-67; column 5, lines 1-14; and Figures 1-3).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the microfabricated chemical reaction chamber of Northrup et al., by adding the plurality of cross channels that are substantially perpendicular to the parallel lengthwise channels, as taught by Poschmann et al., in order to obtain a highly compact reactor with high conversion efficiency (Poschmann et al.; column 2, lines 18-20 and 37-48).

### ***Response to Arguments***

8. The examiner acknowledges the applicants' amendment received by the USPTO on October 4, 2004. The amendment overcomes prior objections to the drawings and claims, as well as most of the specification objections. However, objections to the abstract and portions of the specification still remain. Furthermore, a rejection under 35 USC 112, 2<sup>nd</sup> paragraph remains, as the claim 1 language (formerly dependent claim 3, which was combined into the current independent claim 1) remains unclear (see paragraph 4 above). The applicants have cancelled claims 3 and 12. Claims 1, 2, 4-11, and 13-18 are currently under consideration in the application.

Art Unit: 1725

9. Applicants' arguments with respect to claims 1, 2, 4-11, and 13-18 have been considered but are moot in view of the new ground(s) of rejection.

In response to the applicants' arguments (inlet channels) on pages 8 and 9 of the remarks, the applicants are referred to the newly underlined portions of paragraph 7.

**Conclusion**

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns* 12/11/04  
Examiner  
Art Unit 1725

KPX  
kpk

December 11, 2004